Space Weather Forecast

Issued on Friday, 29 April 2022 at 01:25 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Minor Geomagnetic Storms Likely today and tomorrow, chance of Moderate Storms tomorrow. Chance of Moderate class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with occasional Common class flares observed, the largest from ex-2996 in the northwest quadrant at 28/0306 UTC, and the most recent flare from AR2994. There are currently eight numbered sunspot regions on the visible disc. AR2994 in the far northwestern quadrant remains the most magnetically complex. The remaining sunspot groups are all rather simple and weak.

An associated CME was observed following the largest flare, and although the CME itself is not Earth directed it may interact with an earlier CME that is potentially Earth directed.

Solar Wind / Geomagnetic Activity: The solar wind, as observed at L1, was at slightly elevated to elevated levels, generally between 480-520 km/s, and peaked at 551 km/s at 28/1912 UTC. The solar wind's magnetic field often reached moderate levels through the morning to mid-afternoon, after which it declined to weak levels. The important north-south component, was predominantly weakly negative. Geomagnetic activity started at Active levels and then declined Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low, with a chance of Moderate activity and a very slight chance of High activity.

Solar Wind / Geomagnetic Activity: Current modelling suggests the potential arrival of a CME which left the Sun around 27/1450UTC, either late today or early tomorrow. The CME from the 28th may catch up with this first CME and interact, possibly helping to make the CME more likely to brush Earth. Meanwhile the onset of an enhanced solar wind is expected to arrive today. Later today, but more likely tomorrow, the solar wind speeds are likely to increase to 550-600 km/s, under the combination of the potential CME arrival and the HSS. Speeds will then likely decrease to slightly elevated levels from late day 3 (1st May) onwards. Geomagnetic activity is forecast to be mainly Unsettled to Active today, with a chance of Minor Storm intervals. Tomorrow the geomagnetic activity is expected to increase Unsettled to Minor Storm, with a chance of Moderate Storm intervals before easing back to Quiet to Active during day 3 (1st May), and then Quiet to Unsettled during day 4 (2nd).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is most likely to remain at background levels with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	80	30	10
Strong	G3	No	1	1	5	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	20	20	10
Very Active	R3 to R5 X	No	5	5	3	3

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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